2016

FANS-01333-BIM and Integrated Practice CVS Application - funded

Fanshawe College

Ontario College Quality Assurance Service
Service de l'assurance de la qualité des collèges de l'Ontario

APPLICATION FORM FOR PROGRAM PROPOSAL

A. Funding Request: This proposal will be sent to the MTCU for Approval for Funding.

☒Yes

☐No

B. College Name: Fanshawe College

C. College Contact(s): Person responsible for this proposal.

Name: Tracy Gedies
Title: Director, Centre for Academic Excellence
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Name: Fred Varkaris
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Telephone: 519-452-4430 ext. 4005
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D. Proposed Program Title: BIM and Integrated Practice

E. Proposed Credential: Please select one (1).

☐Local Board Approved Certificate

☐Ontario College Certificate

☐Ontario College Diploma

☐Ontario College Advanced Diploma

☒Ontario College Graduate Certificate

F. Program Maps (Appendix A): Please complete and attach the two (2) Program Maps.
Form 1- Vocational Program Learning Outcomes
Form 2- Essential Employability Skills Outcomes

G. Program Description (Appendix B): Please complete and attach the Program Description Form.

H. Program Curriculum (Appendix C): Please complete and attach the Program Curriculum Form.

I. Regulatory Status Form (Appendix D): Please complete and attach the Regulatory Status Form.

J. Date of Submission to CVS: May 3, 2016

FOR CVS USE ONLY

K. Date of CVS Response: May 13, 2016

L. CVS Validation Decision:

☒ Proposal Validated. APS Number: FANS 01333
Reason: Validated due to good program mapping

☐Proposal not Validated.
Reason:

M. CVS Signature: Karen Belfer

Send the completed form and required appendices to: belfer@ocqas.org. For detailed information on how to complete the *Application Form for Program Proposal*, please refer to the *Instructions for Submission of Program Proposal* document at www.ocqas.org.

INTRODUCTION

The process established by the Credentials Validation Service (CVS) is designed to be a streamlined, seamless, effective, and efficient process that will allow colleges to submit and receive validation requests and decisions in a timely manner. The document with the instructions to complete this form (*CVS Instructions for Submission of Program Proposal*) is available to all colleges on the OCQAS website (www.ocqas.org).

F. PROGRAM MAPS (APPENDIX A): Form 1 - Vocational Program Learning Outcomes

Provincial Vocational Program Outcomes ☐ Provincial Program Standard, *or* ☒ Provincial Program Description *MTCU code*: 78223	**Proposed Program Vocational Learning Outcomes**	**Course Title / Course Code**
(1) Assess requirements for Construction industry Building Information Modeling (BIM) planning and management For Integrated Project Delivery (IPD).	1. Develop an implementation plan for Building Information Modelling (BIM) and Integrated Project Delivery (IPD) in the Architecture, Engineering, and/or Construction industries.	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM BIMM-XXXX Imaging and Computer Generated Imaging for Construction
(2) Formulate strategies for leadership, team---building and personnel management. (6) Apply team---building skills in an interdisciplinary setting and implement in projects collaborative design and construction solutions.	2. Formulate strategies for leadership and personnel management, and apply team building skills in an interdisciplinary setting to develop collaborative design and construction solutions.	BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone)
(3) Analyze BIM processes in integrated project delivery from project	3. Analyze BIM processes and execute appropriate BIM management techniques to	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration

conceptualization to facilities management. (5) Execute appropriate BIM management techniques to facilitate integrated project delivery.	facilitate Integrated Project Delivery from project conceptualization to facilities management.	BIMM-XXXX BIM Management I BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM
(4) Conduct project risk analysis using BIM processes.	4. Conduct project risk analysis using BIM and IPD processes to optimize project outcomes for all stakeholders.	BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM
(7) Deploy BIM computer platform to create virtual building information models.	5. Deploy BIM computer platforms to create virtual building information models and generate presentation elements.	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX BIM Management II BIMM-XXXX Imaging and Computer Generated Imaging for Construction
(8) Integrate knowledge of various suites of BIM applications into project design, construction and facilities management	6. Integrate various suites of BIM applications into project design, construction, and facilities management to improve the transfer of information between different disciplines and during all phases of a building's life cycle.	BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling

Add additional rows as required to complete the mapping exercise.

F. PROGRAM MAPS (APPENDIX A): Form 2 – Essential Employability Skills Outcomes

Skill Categories	**Defining Skills** Skill areas to be demonstrated by the graduates	**Essential Employability Skills Outcomes** The graduate has reliably demonstrated the ability to:	**Course Title / Course Codes** (*As indicated in Appendix A*)
Communication	• Reading • Writing • Speaking • Listening • Presenting • Visual Literacy	• communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM BIMM-XXXX Imaging and Computer Generated Imaging for Construction
		• respond to written, spoken, or visual	BIMM-XXXX Building Information

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
		messages in a manner that ensures effective communication	Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM BIMM-XXXX Imaging and Computer Generated Imaging for Construction
Numeracy	• Understanding and applying mathematical concepts and reasoning • Analysing and using numerical	• execute mathematical operations accurately	BIMM-XXXX BIM Management I BIMM-XXXX BIM Technology II (Capstone)

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
	data • Conceptualizing		BIMM-XXXX Building Energy Modelling BIMM-XXXX Imaging and Computer Generated Imaging for Construction
Critical Thinking & Problem Solving	• Analysing • Synthesizing • Evaluating • Decision-making • Creative and innovative thinking	• apply a systematic approach to solve problems	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM BIMM-XXXX Imaging and Computer

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
			Generated Imaging for Construction
		• use a variety of thinking skills to anticipate and solve problems	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Imaging and Computer Generated Imaging for Construction
Information Management	• Gathering and managing information • Selecting and using appropriate tools and technology for a task or a project	• locate, select, organize, and document information using appropriate technology and information systems	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
	• Computer literacy • Internet skills		BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Imaging and Computer Generated Imaging for Construction
		• analyse, evaluate, and apply relevant information from a variety of sources	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
			BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM BIMM-XXXX Imaging and Computer Generated Imaging for Construction
Inter-personal	• Team work • Relationship management • Conflict resolution • Leadership • Networking	• show respect for the diverse opinions, values, belief systems, and contributions of others	BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM
		• interact with others in groups or teams in ways that contribute to effective working relationships and	BIMM-XXXX BIM Software Integration COMM-6019 Advanced Professional Communications

Skill Categories	Defining Skills Skill areas to be demonstrated by the graduates	Essential Employability Skills Outcomes The graduate has reliably demonstrated the ability to:	Course Title / Course Codes (*As indicated in Appendix A*)
		the achievement of goals	BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Imaging and Computer Generated Imaging for Construction
Personal	• Managing self • Managing change and being flexible and adaptable • Engaging in reflective practice • Demonstrating personal responsibility	• manage the use of time and other resources to complete projects	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX Integrated Practice for AEC Sector BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM

Skill Categories	**Defining Skills** Skill areas to be demonstrated by the graduates	**Essential Employability Skills Outcomes** The graduate has reliably demonstrated the ability to:	**Course Title / Course Codes** (*As indicated in Appendix A*)
			BIMM-XXXX Imaging and Computer Generated Imaging for Construction
		• take responsibility for one's own actions, decisions, and consequences	BIMM-XXXX Building Information Modelling (BIM) Technology I BIMM-XXXX BIM Software Integration BIMM-XXXX BIM Management I COMM-6019 Advanced Professional Communications BIMM-XXXX BIM Technology II (Capstone) BIMM-XXXX Building Energy Modelling BIMM-XXXX BIM Management II BIMM-XXXX Practical Implementation of BIM BIMM-XXXX Imaging and Computer Generated Imaging for Construction

G. PROGRAM DESCRIPTION (APPENDIX B)

Program Description

Provide a brief description of the program, similar to what might be used as, or found in, advertising or a calendar description.

Building Information Modelling (BIM) is a process used to plan, design, construct, and manage buildings and infrastructure during all stages of a building's life cycle. BIM involves the creation of a database of information about a project (e.g., a building's geometry and spatial properties, material properties and quantities) and allows for an Integrated Project Delivery (IPD) or collaborative, multidisciplinary approach to design, engineering, and construction.

BIM and IPD represent rapidly emerging trends for the Architecture, Engineering, and Construction sectors. This one-year Graduate Certificate program will enhance students' knowledge of BIM principles and standards and further develop students' skills for applying BIM in each of these sectors.

This program will be offered in a blended format to provide flexibility to industry professionals looking to enhance their skills and to allow for hands-on learning opportunities in a classroom environment. Students will gain experience using BIM software to design, develop, and manage their building and infrastructure projects.

Laddering Opportunities

Provide a brief description of known laddering into and from the proposed program, e.g. certificate to diploma, diploma to degree, apprenticeship to college, diploma to apprenticeship, college to college, diploma to college degree, etc.

This Graduate Certificate program will be ideal for graduates of Advanced Diploma programs in Civil Engineering, Construction Engineering, and Architectural Technology and graduates of similar degree programs.

Occupational Areas

Provide a brief description of where it is anticipated graduates will find employment.

Graduates of this program will be more employable in their undergraduate disciplines (e.g., architectural technology, construction engineering technology, civil engineering technology) because of the specialized knowledge and skills they will gain from the program. Graduates may also move into specialized roles that draw on their expertise with BIM and IDP such as BIM Coordinator or Planning and Design Project Manager. Graduates may employment in consulting firms involved with building complex projects, as well as in municipal, county, and federal governmental agencies.

Proposed Program Vocational Learning Outcomes

Provide the list of the proposed program vocational learning outcomes. These outcomes should be listed, verbatim as they appear in Appendix A- Form 1.

***The graduate has reliably demonstrated the ability to*:**

1. Develop an implementation plan for Building Information Modelling (BIM) and Integrated Project Delivery (IPD) in the Architecture, Engineering, and/or Construction industries.
2. Formulate strategies for leadership and personnel management, and apply team building skills in an

interdisciplinary setting to develop collaborative design and construction solutions.
3. Analyze BIM processes and execute appropriate BIM management techniques to facilitate Integrated Project Delivery from project conceptualization to facilities management.
4. Conduct project risk analysis using BIM and IPD processes to optimize project outcomes for all stakeholders.
5. Deploy BIM computer platforms to create virtual building information models and generate presentation elements.
6. Integrate various suites of BIM applications into project design, construction, and facilities management to improve the transfer of information between different disciplines and during all phases of a building's life cycle.

Admission Requirements

Identify the Admission Requirements for the program.

A Three-Year College Diploma, or a Degree in a construction related field
OR
An equivalent qualification from another institution as judged by the College
OR
Acceptable combination of related work experience and post-secondary education as judged by the College*

Note:

•*Applicants may be required to submit a resume and cover letter that includes details of work experience.

English Language Requirements

Applicants whose first language is not English will be required to demonstrate proficiency in English by one of the following methods:

• A Grade 12 College Stream or University Stream English credit from an Ontario Secondary School, or equivalent, depending on the program's Admission Requirements
• Test of English as a Foreign Language (TOEFL) test with a minimum score of 570 for the paper-based test (PBT) and 88 for the Internet-based test (iBT), with test results within the last two years
• International English Language Testing System (IELTS) test with an overall score of 6.5 with no score less than 6.0 in any of the four bands, with test results within the last two years
• Canadian Academic English Language (CAEL) test with an overall score of 70 with no score less than 60 in any of the four bands, with test results within the last two years
• An English Language Evaluation (ELE) at Fanshawe College with a minimum score of 75% in all sections of the test, with test results within the last two years

H. PROGRAM CURRICULUM (APPENDIX C)

Semester	Course Code/ Course Title (*As indicated in Appendix A*)	General Education Course *(indicate with an X)*	Total Course Hours	Course Description
1	***BIMM-XXXX*** Building Information Modelling (BIM) Technology I		120.0	In this course, students will explore the various Building Information Modelling (BIM) technologies and practice BIM processes using BIM-enabled software. Autodesk Revit will be the primary platform used by students to further develop BIM models and apply advanced modelling techniques.
1	***BIMM-XXXX*** BIM Software Integration		60.0	In this course, students will explore BIM-enabled software and integration practices. Students will apply and integrate together models from different disciplines to further explore BIM's potential and collaboration capabilities. The focus will be on the integration of construction-specific models.
1	***BIMM-XXXX*** BIM Management I		45.0	In this course, students will research, explore, and apply BIM Management techniques. Students will synthesize the management of internal BIM models and apply collaboration methods to External BIM models and data.
1	***COMM-6019*** Advanced Professional Communications		45.0	This course focuses on refining and advancing students' workplace communication abilities. The advanced communication documents and strategies covered include presentation skills, research skills, business document writing, meeting and management team strategies, business etiquette, and advanced employment communications. Additionally, students learn about interpersonal and intercultural communication (high/low and monochromic/polychromic context) concepts and strategies.
1	***BIMM-XXXX*** Integrated Practice for AEC Sector		30.0	In this course, students will be investigate the emergence of BIM in the AEC sector. Discussions will focus on the applications of contractual methods common to the AEC sector and include the introduction of Integrated Project Delivery (IPD) as a

				contractual method. The dependency of IPD on BIM will also be examined.
		Total Level 1	300.00	
2	***BIMM-XXXX*** BIM Technology II (Capstone)		120.00	Students will complete a multi-disciplinary project with emphasis on BIM implementation, communication of multi-disciplinary teams, and application of integrated practice.
2	***BIMM-XXXX*** Building Energy Modelling		60.0	In this course, students will be introduced to energy modelling platforms and will manipulate BIM models to allow for energy analysis.
2	***BIMM-XXXX*** BIM Management II		45.0	In this course, students will examine advanced management techniques for BIM. Students will apply advanced management strategies to BIM projects in a lab-based environment.
2	***BIMM-XXXX*** Practical Implementation of BIM		45.0	In this course, students will be exposed to the various considerations for industry participants looking to implement BIM technology and processes in their workplace or business. Students will identify the benefits of BIM and outline the criteria for developing a BIM implementation plan.
2	***BIMM-XXXX*** Imaging and Computer Generated Imaging for Construction		30.0	In this course, students will be introduced to rendering techniques and platforms using BIM models. Students will generate presentation elements such as renderings, computer-generated images, and walkthroughs to assist in the project presentations.
		Total Level 2	300.00	
		TOTAL	600.00	

Add additional rows as required to complete the curriculum chart.

I. REGULATORY STATUS FORM (APPENDIX D)

Please complete the following:

There IS a legislative requirement that program graduates must be certified or licensed by a regulatory authority to practice or work in the occupation

☐ **Mandatory recognition of a regulatory authority exists and is being sought.**
(Please refer to Section A below- *Mandatory Regulatory Requirements*)

There IS or IS NOT a voluntary (i.e., not required by legislation) licensing or certification for entry to practice in the profession or trade.

☐ YES

☒ NO

☐ **Voluntary recognition of a regulatory authority IS being sought.**
(Please refer to Section B below- *Recognition by Voluntary Association*)

☐**Voluntary recognition is NOT being sought***.
Please explain why: Click here to enter text.

*Note: *There may be titling implications for programs that are not seeking recognition in an area where existing programs have secured recognition.*

A. MANDATORY REGULATORY REQUIREMENTS

Where licensing or certification is ***required by legislation*** for entry to practice in the profession or trade, the Ministry of Training, Colleges and Universities requires that colleges ensure that their programs will meet the requirements of the regulatory body in order to be approved for funding.

Name of regulatory authority: N/A

Status (please select ALL that apply)

☐ Accreditation or approval by the regulatory authority / designated third party received.
Date of recognition:

☐ The college is working toward accreditation with the regulatory authority/ designated third party.
Describe current status of application:
Expected date of recognition:

☐ The regulatory authority does not accredit educational programs directly or through designated third party. Formal acknowledgement (e.g. in its published or legislated registration requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

Please submit an acknowledgement and/or evidence from the regulatory authority regarding the status of the recognition.

B. RECOGNITION BY VOLUNTARY ASSOCIATION

Colleges may choose to have a program accredited or recognized by a voluntary membership organization or association. Graduate eligibility for association recognition or adherence to standards imposed by the body is ***a recommendation and not a requirement*** for program funding approval by the Ministry of Training, Colleges and Universities.

Name of voluntary association: N/A

Status (please select ALL that apply)

☐ The college is working toward recognition.
Describe current status of application:
Expected date of recognition:

☐ Recognition has been received.
Date of recognition:
Type of recognition (e.g. accreditation, graduates eligible to write membership exams, etc.):

☐ The association does not recognize educational programs directly or through designated third party. Formal recognition (e.g. in its published requirements) that the program graduates will be eligible to write any required certifying or registration exam(s) or that the program is otherwise recognized for the purposes of certifying or registering a graduate is being sought.

Please submit an acknowledgement and/or evidence from the regulatory authority or voluntary association regarding the status of the recognition.